

Claims

1. Process for the preparation of organically modified aerogels with permanently hydrophobic surfac groups in which one
- introduces a lyogel into the reactor;
 - washes the lyogel introduced into the reactor in step a) with an organic solvent;
 - surface-silylates the gel obtained in step b) and
 - dries the surface-silylated gel obtained in step c), characterized by the feature that, as the silylating agent in step c), one uses a disiloxane of formula I



whereby the residues R, independently of one another, identically or differently, signify in each case a hydrogen atom or a nonreactive, organic, linear, branched, cyclic, saturated or unsaturated, aromatic or heteroaromatic residue.

2. Process in accordance with Claim 1, characterized by the feature that, in step a), one introduces a silicate-type lyogel into the reactor.

3. Process in accordance with Claim 2, characterized by the feature that, in step a), one introduces into the reactor a silicate-type lyogel which is obtainable by hydrolysis and condensation of Si alkoxides in an organic solvent with water.

4. Process in accordance with Claim 2, characterized by the feature that, in step a), one introduces into the reactor a silicate-type hydrogel that is prepared by bringing an aqueous water glass solution to a pH value ≤ 3 with the aid of an acidic ion-exchanged resin or an inorganic acid and, via the addition of a

Coating →

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base, polycondensing the silicic acid, which is produced in this way, to give a SiO_2 gel and, if an inorganic acid has been used, washing the gel essentially free from electrolytes with water.

5. Process in accordance with Claim 2, characterized by the feature that one introduces into the reactor in step a) a silicate-type gel (which is prepared by obtaining it from an aqueous water glass solution with the aid of at least one organic and/or inorganic acid via the intermediate stage of a silicic acid sol).

6. Process in accordance with one of Claims 1 through 5, characterized by the feature that, prior to and/or during the preparation of the gel, one adds IR turbidity-promoting agents.

7. Process in accordance with one of Claims 1 through 6, characterized by the feature that fibers are added prior to, and/or during, the preparation of the gel.

8. Process in accordance with at least one of the preceding claims, characterized by the feature that one allows the lyogel obtained in step a) to age before it is washed in step b).

9. Process in accordance with at least one of the preceding claims, characterized by the feature that one washes the gel in step b) for a sufficiently long time until the water content of the gel is ≤ 5 wt%.

10. Process in accordance with at least one of the preceding claims, characterized by the feature that use is made of aliphatic alcohols, ethers, esters, or ketones and aliphatic or aromatic hydrocarbons as the organic solvents in step b).

11. Process in accordance with at least one of the preceding claims, characterized by the feature that use is made of a symmetrical disiloxane as the silylating agent in step c).

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12. Process in accordance with at least one of the preceding claims, characterized by the feature that, as the silylating agent in step c), a disiloxane is used in which all the residues R in the disiloxane are identical.

13. Process in accordance with at least one of the preceding claims, characterized by the feature that hexamethyldisiloxane is used as the silylating agent in step c).

14. Process in accordance with at least one of the preceding claims, characterized by the feature that the silylation process is carried out in a solvent.

15. Process in accordance with at least one of the preceding claims, characterized by the feature that the silylation process is carried out in the presence of a catalyst, preferably an acid.

16. Process in accordance with at least one of the preceding claims, characterized by the feature that the silylation process is carried out in the presence of catalytic quantities of trimethylchlorosilane.

17. Process in accordance with at least one of the preceding claims, characterized by the feature that, prior to step d), one washes the surface-silylated gel with a protic or aprotic solvent.

18. Process in accordance with at least one of the preceding claims, characterized by the feature that one subcritically dries the surface-silylated gel.

7 19. Process in accordance with at least one of the preceding claims, characterized by the feature that, prior to silylation, one reacts the gel obtained in step b) with a solution of an orthosilicate, which is capable of bringing about condensation, of formula $R^1_nSi(OR^2)_4$, preferably an alkyl orthosilicate and/or an aryl orthosilicate, whereby $n = 2$ through 4 and R^1 and R^2 , independently of one another, are hydrogen atoms, linear or

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branched C₁-C₄ alkyl residues, cycl hexyl residues or phenyl residues, or with an aqueous silicic acid solution.

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